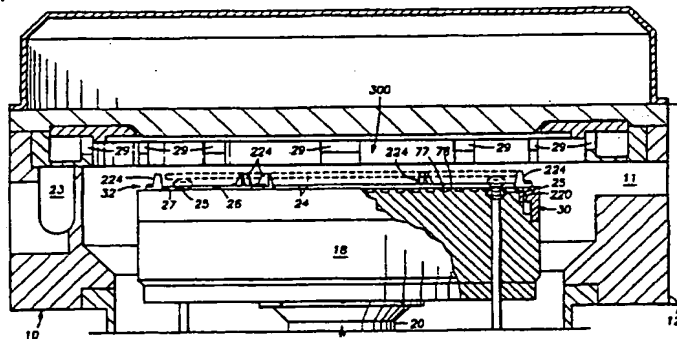




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(21) International Application Number: PCT/US95/02138 (22) International Filing Date: 21 February 1995 (21.02.95) (30) Priority Data: 08/200,862      23 February 1994 (23.02.94)      US 08/200,079      23 February 1994 (23.02.94)      US (71) Applicant: APPLIED MATERIALS, INC. [US/US]; 3050 Bowers Avenue, Santa Clara, CA 95052-8039 (US). (72) Inventors: SINHA, Ashok; 4176 Hubbard Drive, Palo Alto, CA 94306 (US). CHANG, Mei; 863 East Estates Drive, Cupertino, CA 95014 (US). PERLOV, Ilya; 183 Blake Avenue, Santa Clara, CA 95051 (US). LITTAU, Karl; 395 Ano Nuevo Avenue #108, Sunnyvale, CA 94086 (US). MORRISON, Alan; 15221 Dickens Avenue, San Jose, CA 95124 (US). LEI, Lawrence, Chung-Lai; 1594 Country Club Drive, Milpitas, CA 95035 (US). (74) Agent: STREETS, Jeffrey, L.; Gunn & Associates, Suite 2900, Five Greenway Plaza, Houston, TX 77046 (US).			(81) Designated States: JP, KR, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  Published Without international search report and to be republished upon receipt of that report.

(54) Title: CHEMICAL VAPOR DEPOSITION CHAMBER



## (57) Abstract

A chemical vapor deposition chamber (10) includes a substrate support member (18) positionable therein to receive a substrate (24) thereon for processing. The support member (18) is positioned in the chamber (10) by a moveable stem (20) which extends through a sealed aperture (100) in the base of the chamber (10). To reduce heat transfer from the stem (20) outwardly of the chamber, the stem (20) includes a heat choke portion (44). To ensure that the support member (18) does not droop or sag under the high temperature conditions present in the chamber (10), a secondary plate (91) having high thermal resistance is maintained against the non-substrate receiving side of the support member (18). The use of the secondary plate (91) enables the use of highly thermally conductive, but low thermal strength, materials for the support member (18). The chamber (10) also includes a detection system for detecting the presence of mis-aligned, cracked or warped substrates (24) in the chamber (10). The support member (18) preferably includes a plurality of vacuum grooves (77, 78) therein, which are maintained at a vacuum pressure to firmly adhere the substrate (24) to the support member (18) during processing. If the vacuum is not maintainable in the grooves (77, 78), this is indicative of a cracked, mis-aligned or warped substrate (77, 78). If this condition occurs, a controller shuts down the chamber and indicates the presence of a cracked, warped or mis-aligned substrate (24). The chamber also provides for edge protection of the substrates (24) as they are processed in the chamber (10). This is provided by creating a purge gas channel (220) about the perimeter of the substrate (24) and aligning the edge of the substrate (24) such that a purge gas gap is provided about the perimeter of the substrate edge.